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### EDUCATION

- 1967 High School at Leibniz Gymnasium in Gelsenkirchen
- 1967 - 1975 Studies in Mathematics, Economics, Philosophy and Pedagogy at University of Bochum:  
Diploma and 1st state examination with a major in Mathematics
- 1972 Computer Science internship at Compagnie Saint-Gobain Pont-a-Mousson, Paris
- 1979 Doctorat in Mathematics at University of Duisburg
- 1980 - 1984 Studies in Computer Science, distance learning, University of Hagen
- 1986 Habilitation in Mathematics at University of Duisburg

### PROFESSIONAL BACKGROUND

- 1975 - 1982 Assistant Professor at Department of Mathematics in University of Duisburg
- 1981 - 1982 Visiting Assistant Professor at Rensselaer Polytechnic Institute Troy, NY
- 1982 - 1987 Assistant Professor and Research Assistant at Department of Mathematics in University of Duisburg
- 1983 - 1988 Assistant Professor at Drexel University, Philadelphia, PA
- 1987 - 1989 Temporary Professor at Department of Mathematics in University of Duisburg
- 1989 - 1993 Professor of Theoretical Computer Science at European Business School, Oestrich-Winkel
- 1993 Appointment as Professor of Computer Science at Department of Mathematics in University of Duisburg; Senior Professor since 2014

### HONOURS

- 1993 Awards from Ministry of Education of People's Republic of China and Shanghai Fudan University for advances in Science and Technology
- 1999 Honorary Doctorate awarded by Babes-Bolyai University Cluj-Napoca

### MEMBERSHIP IN SCIENTIFIC SOCIETIES

German Mathematicians Association  
European Mathematical Society  
Romanian Society of Mathematical Sciences

## PUBLISHED WORKS

1. Konvergenzsätze vom Bohman-Korovkin-Typ für positive lineare Operatoren. Diplomarbeit, Ruhr-Universität Bochum 1975, 223pp.
2. Übungen des Formalisierens in der Sekundarstufe I an einem Modell der Gruppentheorie. Schriften der Gesellschaft der Freunde der Niederrheinischen Universität 8 (1977), 119-125.
3. Interpolation im Analysisunterricht der Sekundarstufe II. In: Beiträge zum Mathematikunterricht 1978, Hannover: Schrödel 1978, 83-85.
4. Zur Mathematisierung eines Polygonproblems. Math.-Phys. Semesterberichte 26 (1979), 125-140.
5. Quantitative Aussagen zur Approximation durch positive lineare Operatoren. Dissertation, Universität Duisburg 1979 (190 pp.).
6. On Mamedov estimates for the approximation of finitely defined operators. In: Approximation Theory III (Proc. Int. Sympos. Austin 1980; hrsg. v. E.W. Cheney), 443-448. New York: Acad. Press 1980.
7. (with G. Simm) Algebraische Strukturen. Stuttgart: Teubner 1980 (208 pp.).
8. (with W. Drols) On the singularity of special DMS-matrices - a complete characterization. In: Functions, Series, Operators, Vol. I, II (Proc. Int. Conference Budapest 1980; hrsg. v. B. Sz.-Nagy und J. Szabados), 385-390. Colloq. Soc. János Bolyai 35, Amsterdam - New York: North Holland 1983.
9. A note on pointwise approximation by Hermite-Fejér type interpolation polynomials. In: Functions, Series, Operators, Vol. I, II (Proc. Int. Conference Budapest 1980; hrsg. v. B. Sz.-Nagy und J. Szabados), 525-537. Colloq. Soc. János Bolyai 35, Amsterdam - New York: North Holland 1983.
10. (with W. Drols, G. Simm) Zur inhaltlichen und methodischen Gestaltung von Analysiskursen im Rahmen der Lehrerausbildung (Primarstufe/Sekundarstufe I). In: Beiträge zum Mathematikunterricht 1981, Hannover: Schrödel 1981, 27-28.
11. On almost-Hermite-Fejér-Interpolation: pointwise estimates. Bull. Austral. Math. Soc. 25 (1982), 405-423.
12. On quasi-Hermite-Fejér interpolation: pointwise estimates. In: Constructive Function Theory '81 (Proc. Int. Conf. Varna 1981; hrsg. v. Bl. Sendov et al.), 328-335. Sofia: Publishing House of the Bulgarian Academy of Sciences 1983. 11a. Query in "Unsolved Problems". In: Constructive Function Theory '81 (Proc. Int. Conf. Varna 1981; hrsg. v. Bl. Sendov et al.), 597-598. Sofia: Publishing House of the Bulgarian Academy of Sciences 1983.
13. On approximation of continuously differentiable functions by positive linear operators. Bull. Austral. Math. Soc. 27 (1983), 73-81.
14. (with E. Hinnemann) Generalization of a theorem of DeVore. In: Approximation Theory IV (Proc. Int. Sympos. College Station 1983; hrsg. v. C.K. Chui et al.), 527-532. New York: Acad. Press 1983.
15. (with J. Meier) A bibliography on approximation of functions by Bernstein-type operators (1955-1982). In: Approximation Theory IV

- (Proc. Int. Sympos. College Station 1983; hrsg. v. C.K. Chui et al.), 739-785. New York: Acad. Press 1983.
16. On approximation in spaces of continuous functions. Bull. Austral. Math. Soc. 28 (1983), 411-432. 15a. Two problems on best constants in direct estimates. In: Problem Section of Proc. Sec. Edmonton Conf. Approximation Theory (Edmonton, Alta., 1982; ed. by Z. Ditzian et al), 394. Providence, RI: Amer. Math. Soc. 1983.
  17. Quantitative Korovkin-type theorems on simultaneous approximation. Math. Z. 186 (1984), 419-433.
  18. (with W. Drols) Zur Konvergenzgüte der Folge der Stufenpolynome über den Nullstellen der Legendre-Polynome. Z. Angew. Math. Mech. 64 (1984), 411-413.
  19. On approximation in  $C(X)$ . In: Constructive Theory of Functions (Proc. Int. Conference Varna 1984; hrsg. v. Bl. Sendov et al.), 364-369. Sofia: Publishing House of the Bulgarian Academy of Sciences 1984.
  20. (with J. Meier) Quantitative theorems on approximation by Bernstein-Stancu operators. Calcolo 21 (1984), 317-335.
  21. On approximation by linear operators: improved estimates. Anal. Numér. Théor. Approx. 14 (1985), 7-32.
  22. Quantitative Approximation in  $C(X)$ . Habilitationsschrift, Universität Duisburg 1985 (312 pp.).
  23. (with E. Hinnemann) Punktweise Abschätzungen zur Approximation durch algebraische Polynome. Acta Math. Hungar. 46 (1985), 243-254.
  24. (with K. Jetter) Jackson-type theorems on approximation by trigonometric and algebraic pseudopolynomials. J. Approx. Theory 48 (1986), 396-406.
  25. (with C. Badea und I. Badea) A test function theorem and approximation by pseudopolynomials. Bull. Austral. Math. Soc. 34 (1986), 53-64.
  26. Simultaneous approximation by algebraic blending functions. In: Alfred Haar Memorial Conference (Proc. Int. Conference Budapest 1985; hrsg. v. J. Szabados und K. Tandori). Colloq. Soc. János Bolyai 49, 363-382, Amsterdam-Oxford-New York: North Holland 1987.
  27. Modified Piçugov-Lehnhoff operators. In: Approximation Theory V (Proc. Int. Sympos. College Station 1986; hrsg. v. C.K. Chui et al.), 355-358. New York: Acad. Press 1986.
  28. (with J. Meier-Gonska) A bibliography on approximation of functions by Bernstein-type operators (supplement 1986). In: Approximation Theory V (Proc. Int. Sympos. College Station 1986; hrsg. v. C.K. Chui et al.), 621-654. New York: Acad. Press 1986.
  29. (with Jia-ding Cao) Approximation by Boolean sums of positive linear operators. Rend. Mat. 6 (1986), 525-546.
  30. (with J. Meier) On approximation by Bernstein type operators: best constants. Studia Sci. Math. Hungar. 22 (1987), 287-297.
  31. (with C. Badea, I. Badea und C. Cottin) Notes on the degree of approximation of B-continuous and B-differentiable functions. Approx. Theory & its Appl. 4 (1988), 95-108.
  32. (with A. Röth) Control point insertion for B-spline curves.

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33. Degree of approximation by lacunary interpolators:  $(0, \dots, R-2, R)$  interpolation. Rocky Mountain J. Math. 19 (1989), 157-171.
  34. (with Jia-ding Cao) Approximation by Boolean sums of positive linear operators II: Gopengauz-type estimates. J. Approx. Theory 57 (1989), 77-89.
  35. (with Jia-ding Cao) Pointwise estimates for modified positive linear operators. Portugal. Math. 46 (1989), 401-430.
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  37. Simultaneous approximation by generalized  $n$ -th order blending operators. In: Multivariate Approximation Theory IV (Proc. Conf. Oberwolfach 1989; hrsg. v. C.K. Chui, W. Schempp and K. Zeller), 173-180. Basel: Birkhäuser 1989.
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  41. (with Jia-ding Cao) Approximation by Boolean sums of linear operators: Telyakovski<sup>^</sup>-type estimates. Bull. Austral. Math. Soc. 42 (1990), 253-266.
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  57. (with Ding-xuan Zhou) Local smoothness of functions and Bernstein-Durrmeyer operators. *Comput. Math. Appl.* 30 (1995), 83-101.
  58. (with R.K. Kovacheva) The second order modulus revisited: remarks, applications, problems. *Confer. Sem. Mat. Univ. Bari* 257 (1994), 1-32.
  59. (with C. Badea und C. Cottin) Bögel functions, tensor products and blending approximation. *Math. Nachr.* 173 (1995), 25-48.
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73. (with Jia-ding Cao und D. Kacsó ) Simultaneous approximation by discretized convolution-type operators. In: "Approximation and Optimization" (Proc. Int. Conf. on Approximation and Optimization (Romania) - ICAOR, hrsg. v. D.D. Stancu et al.), 203-218. Cluj-Napoca: Transilvania Press 1997.
74. (with I. Gavrea und D. Kacsó ) Variation on Butzer's problem: characterization of the solutions. *Comput. Math. Appl.* 34 (1997), 51-64.
75. (with Ding-xuan Zhou) Design of Wilson-Fowler splines. *Studia Univ. Babes-Bolyai, Mathematica* 42 (1997), no. 1, 89-100.
76. (with I. Gavrea und D. Kacsó ) On linear operators with equidistant nodes: negative results. *Rend. Circ. Mat. Palermo (2) Suppl.* 52 (1998), 445-454.
77. (with I. Gavrea und D. Kacsó) On discretely defined positive linear polynomial operators giving optimal degrees of approximation. *Rend. Circ. Mat. Palermo (2) Suppl.* 52 (1998), 455-473.
78. (with I. Gavrea und D. Kacsó ) On the variation-diminishing property. *Resultate Math.* 33 (1998), 96-105.
79. (with I. Gavrea und D. Kacsó ) A class of discretely-defined positive linear polynomial operators satisfying DeVore-Gopengauz inequalities. *Anal. Numér. Théor. Approx.* 27 (1998), no. 2, 263-275.
80. The second order modulus again: some still ( ) open problems. In: " RoGer ' 98 " (Proc. Third Romanian-German Seminar on Approximation Theory, Sibiu 1998; hrsg. v. A. Lupas et al.), 13-14. Sibiu: Universitatea "Lucian Blaga" 1998 *Gen. Math.* 6 (1998), 17-18. (Eine erweiterte Version erschien in der Schriftenreihe des Fachbereichs Mathematik der Universität Duisburg SM-DU-426 (1998)).
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83. (with Jia-ding Cao) Approximation by Boolean sums of positive linear operators VI: monotone approximation and global smoothness preservation. Anal. Numér. Théor. Approx. 28 (1999), 37-61.
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## JOURNALS

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	Schriftenreihe des Fachbereichs Mathematik, Universität DUISBURG-Essen
	Bulletin of the Transilvania University of Brasov

## CONFERENCES&WORKSHOPS

Organizer	<b><u>NAAT 2010 - Cluj-Napoca</u></b>
Conferences & Workshops	The 2nd International Conference on Numerical Analysis and Approximation Theory (Cluj-Napoca/Transilvania, September 23-26, 2010).
	<b><u>RoGerS 2009 - Sibiu</u></b>
	Romanian-German Symposium on Mathematics and its Applications (Sibiu/Transilvania, May 14-17, 2009), including the 9th Romanian-German Seminar on Approximation Theory and its Applications.
	<b><u>RoGer 2008 - Sibiu</u></b>
	The 8th Romanian-German Seminar on Approximation Theory and its Applications (Sibiu/Transilvania, May 28 - June 1, 2008).
	<b><u>RoGer 2007 - Königswinter</u></b>
	Bilateral Romanian-German Workshop on Approximation and Wavelets (Königswinter/Germany, October 1-4, 2007).
	<b><u>NAAT 2006 - Cluj-Napoca</u></b>
	International Conference on Numerical Analysis and Approximation Theory (Cluj-Napoca/Transilvania, July 5-8, 2006).
	<b><u>RoGer 2004 - Baisoara</u></b>
	The 6th Romanian-German Seminar on Approximation Theory and its Applications (Baisoara/Transilvania, June 3-6, 2004).

### **Optimization, Approximation, and Multiscale Analysis with Applications to Signal and Image Processing**

Minisymposium im Rahmen des Internationalen Kongresses der "Mathematical Society of Southeastern Europe" (Borovets/Bulgaria, September 15-21, 2003).

### **RoGer 2002 - Sibiu**

The 5th Romanian-German Seminar on Approximation Theory and its Applications (Sibiu/Transilvania, June 12-15, 2002).

### **RoGer 2000 - Brasov**

The 4th Romanian-German Seminar on Approximation Theory and its Applications (Brasov/Transilvania, July 3-5, 2000).

### **RoGer 1998 - Sibiu**

The 3rd Romanian-German Seminar on Approximation Theory and its Applications (Sibiu/Transilvania, June 1-3, 1998).

### **RoGer 1996 - Cluj-Napoca**

The 2nd Romanian-German Seminar on Approximation Theory and its Applications (Cluj-Napoca/Transilvania, August 1996).

### **RoGer 1994 - Cluj-Napoca**

Foundation of the series of RoGer Seminars at the Technical University Cluj-Napoca (September 1994).

### **ORR/RRW**

Between 1990 and 1997, organization of the [Oberseminars Rhein-Ruhr](#) and various workshops on applied analysis, approximation theory, CAGD and numerical mathematics at the European Business School, the Dortmund University of Applied Sciences and in the international training center Willebadessen. This tradition is continued in the form of the [Rhein-Ruhr-Workshops](#).